CONSOLIDATED INFORMATION TECHNOLOGY SERVICES
TASK ASSIGNMENT (TA)

1. **TITLE:** (D318) Revised Multi-Attribute Task Battery (R-MATB)

TA No:	122-Rev2	
Task Area Monitor:	**Alternate Task Area Monitor:**	
NASA POC:	**Software Control Class:**	Low Control
Type of Task:	Non-Recurring Task	

2. BACKGROUND

For optimal performance and safety, flight deck systems that intelligently adapt to the capabilities and frailties of human (as well as automated) agents need to be responsive to individual differences among operators and use these baseline characteristics, or traits, to more sensitively interpret in situ assessment of operator states. The objective of this research effort is to develop a task battery with which we can study the influence of traits on multiple task performance, in particular with varying degrees of automation, with non-pilot subjects and minimal training, but with tasks that correspond to piloting tasks.

The MATB (Multi-attribute Task Battery (Comstock & Arnegard, 1992) is a computer-based task designed to evaluate operator performance and workload. The MATB requires the simultaneous performance of monitoring, dynamic resource management, and tracking tasks. The simultaneous performance of multiple tasks is a central feature of the MATB and it is this feature that is consistent with most operational systems and thus makes the task useful for our purposes as a research platform. Each of the MATB tasks can be considered to correspond with a specific performance category in relation to Rasmussen s human performance typology . The MATB tracking task requires the manual operation of a joystick in order to keep a target in the center of a tracking window. This tracking task is performed based on a relatively automated pattern of behaviors that do not require conscious attention and the task is therefore classified as a skill-based behavior. The monitoring task requires the resetting of a gauge once it has been detected as operating out of a specified range. Specific actions are taken in response to each gauge in accord with an a priori determined set of rules. As such, this task is classified as a rule-based behavior. The resource management task requires the activation of pumps in order to fill two tanks and also requires the maintenance of certain levels within them. This dynamic task has no predetermined rules for specific operation and therefore requires conscious processing due to the ongoing problem solving nature of the task.

The original MATB is written in QuickBASIC (v. 4.5) (c.1992) and operates on a DOS prompt. Since then, over 100 papers have been written that used this testing platform or extensions of it. This task will develop a revised MATB that is capable of running on a modern operating system and is written in a modern, supported programming language. Extensions to the original design will be incorporated to take advantage of modern computing capability and I/O device interfacing, as well as to extend the functional testing capability of this platform.

3. OBJECTIVE

The original MATB is written in QuickBASIC (v. 4.5) (c.1992) and operates on a DOS prompt. This task will develop a revised MATB that is capable of running on a modern operating system and is written in a modern, supported programming language. Extensions to the original design will be incorporated to take advantage of modern computing capability and I/O device interfacing, as well as to extend the functional testing capability of this platform. The initial implementation will closely follow the functionality of the current version of MATB, and extended version will be developed as requirements are defined and funds become available. The contractor shall provide commented source code and usage documentation.

4. GENERAL IT SUPPORT SERVICES

Services Specified Through Exhibit A:
System Software Management,

General IT Support Services Performance Metrics

Performance Standard: Documentation covering the use of custom software covered by this requirement is complete, understandable, and up-to-date.

Performance Metrics:

- Exceeds: Documentation is error free, complete and up-to-date. Significant improvements have been made in the clarity of documentation or documentation is proactively sought from all sources.
- Meets: Documentation is complete with only minor errors noted
- Fails: One or more required documentation components are not available or errors are noted that could compromise the operation or integrity of the applications.

Performance Standard: Performance Standard: The contractor delivers product within costs and schedule.

Performance Metrics:

- Exceeds: The contractor delivers application to the customer prior to scheduled delivery date and under cost.
- Meets: The contractor delivers application to the customer on scheduled delivery date and within cost.
- Fails: The contractor delivers application to the customer after scheduled delivery date and/or exceeds stated cost by more than ten percent.

5. SYSTEM AND APPLICATION DEVELOPMENT SERVICES

None required.

6. WORK-AREA SPECIFIC SERVICES

None required.

7. Exhibit A

None required.

8. SPECIAL SECURITY REQUIREMENTS

None required.

9. SOFTWARE ENGINEERING PROCESS REQUIREMENTS

None required.

10. JOINT REVIEW SCHEDULE

Weekly meetings will be conducted with demonstration and discussion of progress.

11. PERIOD OF PERFORMANCE

This TA is effective from 03/10/08 to 04/27/10

12. TECHNICAL PERFORMANCE RATING

For Initial MATB functionality Quality 50% Timeliness 50%

Quality: 50% Timeliness: 50%

For extended MATB functionality Quality 75% Timeliness 25%

Quality: 75% Timeliness: 25%

13. RESPONSE REQUIREMENTS

This Task Plan shall address the contractor's specific work plans, associated estimated labor hours, cost and schedule.

14. GOVERNMENT ESTIMATED COST

15. FUNDING INFORMATION

Funding last submitted on 08/07/2009.

16. MILESTONES

None required.

17. DELIVERABLES

Number	Deliverable Item	Deliverable Schedule
1	MATB Beta Testing Version	5/31/09
2	MATB Screen Captures For Documention	5/31/09
3	MATB Microsoft Compiled HTML Help File	7/31/09
4	MATB Revisions based upon Beta test results.	9/30/09
5	Biweekly meetings with TAM, POC, Alternate TAM	biweekly

18. FILE ATTACHMENTS

None.